Amendments to the Claims

This listing of claims supersedes all prior listing of claims.

1. (currently amended) A method, comprising:

~~a link receiver~~ providing from a link receiver, a plurality of data credits to a link transmitter;

allocating at the link transmitter the plurality of data credits to a plurality of logical channels;

~~the link transmitter~~ transmitting a packet from the link transmitter to the link receiver on an ingress link;

diminishing the plurality of data credits as the packet is transmitted;

~~the link receiver~~ storing the packet in a plurality of receiver buffers at the link receiver;

~~the link receiver~~ transmitting the packet out of the plurality of receiver buffers at the link receiver on an egress link;

placing the plurality of receiver buffers into a free buffer pool as the packet is transmitting out of the plurality of receiver buffers, wherein the free buffer pool corresponds to additional data credits; and

~~the link receiver~~ transmitting a flow control packet from a link receiver to the link transmitter, wherein the flow control packet comprises the additional data credits.

2. (original) The method of claim 1, wherein the ingress link has an ingress link speed, and the egress link has an egress link speed, wherein placing the plurality of receiver buffers into the free buffer pool comprises:

if the egress link speed is less than the ingress link speed, placing the plurality of receiver buffers in the free buffer pool after a portion of the packet has been transmitted out of the plurality of receiver buffers, and wherein the portion of the packet is proportional to a ratio of the egress link speed to the ingress link speed; and

if the egress link speed is one of greater than and equal to the ingress link speed, placing the plurality of receiver buffers into the free buffer pool when the packet begins transmitting out of the plurality of receiver buffers.

3. (original) The method of claim 2, wherein the packet begins transmitting out of the plurality of receiver buffers when one of the plurality of receiver buffers is empty.

4. (currently amended) The method of claim 2, wherein the portion of the packet is ~~substantially~~ equal to one minus the ratio of the egress link speed to the ingress link speed.

5. (currently amended) The method of claim 1, further comprising ~~wherein the link transmitter has a plurality of logical channels, and wherein the link transmitter selects to which of~~ selecting from the plurality of logical channels to allocate the additional data credits at the link transmitter.

6. (cancelled)

7. (original) The method of claim 1, wherein the link transmitter and the link receiver operate in a switch fabric network.

8. (original) The method of claim 7, wherein the switch fabric network is one of an Infiniband network and a Serial RapidIO network.

9. (currently amended) A method, comprising:

allocating at the link transmitter a plurality of data credits to a plurality of logical channels;

~~a link transmitter~~ transmitting a packet from the link transmitter to a link receiver on an ingress link;

diminishing ~~a~~ the plurality of data credits at the link transmitter as the packet is transmitted;

~~the link receiver~~ storing the packet in a plurality of receiver buffers at the link receiver;

~~the link receiver~~ transmitting the packet out of the plurality of receiver buffers at the link receiver on an egress link; and

placing the plurality of receiver buffers into a free buffer pool when the packet begins transmitting out of the plurality of receiver buffers, wherein the free buffer pool corresponds to additional data credits.

10. (original) The method of claim 9, wherein the packet begins transmitting out of the plurality of receiver buffers when one of the plurality of receiver buffers is empty.

11. (currently amended) The method of claim 9, further comprising ~~wherein the link transmitter has a plurality of logical channels, and wherein the link transmitter selects to which of~~ selecting from the plurality of logical channels to allocate the additional data credits at the link transmitter.

12. (cancelled)

13. (currently amended) A method, comprising:

allocating at the link transmitter a plurality of data credits to a plurality of logical channels;

~~a link transmitter~~ transmitting a packet from the link transmitter to a link receiver on an ingress link;

diminishing ~~a~~ the plurality of data credits at the link transmitter as the packet is transmitted;

~~the link receiver~~ storing the packet in a plurality of receiver buffers at the link receiver;

~~the link receiver~~ transmitting the packet out of the plurality of receiver buffers at the link receiver on an egress link; and

placing the plurality of receiver buffers in a free buffer pool after a portion of the packet has been transmitted out of the plurality of receiver buffers, wherein the portion of the packet is proportional to a ratio of an egress link speed to an ingress link speed, and wherein the free buffer pool corresponds to additional data credits.

14. (currently amended) The method of claim 13, wherein the portion of the packet is ~~substantially~~ equal to one minus the ratio of the egress link speed to the ingress link speed.

15. (currently amended) The method of claim 13, further comprising ~~wherein the link transmitter has a plurality of logical channels, and wherein the link transmitter selects to which of~~ selecting from the plurality of logical channels to allocate the additional data credits at the link transmitter.

16. (cancelled)

17. (currently amended) A switch, comprising:

a plurality of receiver buffers coupled to receive a packet from a link transmitter after the link transmitter allocates a plurality of data credits to a plurality of logical channels, wherein the packet is stored in the plurality of receiver buffers, and wherein the switch transmits the packet out of the plurality of receiver buffers;

a free buffer pool; and

a link receiver flow control algorithm, wherein the link receiver flow control algorithm places the plurality of receiver buffers into the free buffer pool as the packet is transmitting out of the plurality of receiver buffers.

18. (original) The switch of claim 17, wherein the switch is coupled to receive the packet on an ingress link having an ingress link speed, and wherein the switch is coupled to transmit the packet on an egress link having an egress link speed, wherein placing the plurality of receiver buffers into the free buffer pool comprises:

if the egress link speed is less than the ingress link speed, the plurality of receiver buffers are placed in the free buffer pool after a portion of the packet has been transmitted out of the plurality of receiver buffers, and wherein the portion of the packet is proportional to a ratio of the egress link speed to the ingress link speed; and

if the egress link speed is one of greater than and equal to the ingress link speed, the plurality of receiver buffers are placed into the free buffer pool when the packet begins transmitting out of the plurality of receiver buffers.

19. (original) The switch of claim 18, wherein the packet begins transmitting out of the plurality of receiver buffers when one of the plurality of receiver buffers is empty.

20. (original) The switch of claim 18, wherein the portion of the packet is equal to one minus the ratio of the egress link speed to the ingress link speed.

21. (original) The switch of claim 17, wherein the switch operates in a switch fabric network.

22. (original) The switch of claim 21, wherein the switch fabric network is one of an Infiniband network and a Serial RapidIO network.

23. (currently amended) A computer-readable medium ~~containing~~ encoded with computer executable instructions for instructing a processor to perform a method of early buffer return, the instructions comprising:

allocating at the link transmitter the plurality of data credits to a plurality of logical channels;

~~a link transmitter~~ transmitting a packet from the link transmitter to a link receiver on an ingress link;

diminishing ~~a~~ the plurality of data credits at the link transmitter as the packet is transmitted;

~~the link receiver~~ storing the packet in a plurality of receiver buffers at the link receiver;

~~the link receiver~~ transmitting the packet out of the plurality of receiver buffers at the link receiver on an egress link; and

placing the plurality of receiver buffers into a free buffer pool when the packet begins transmitting out of the plurality of receiver buffers, wherein the free buffer pool corresponds to additional data credits.

24. (original) The computer-readable medium of claim 23, wherein the packet begins transmitting out of the plurality of receiver buffers when one of the plurality of receiver buffers is empty.

25. (currently amended) The computer-readable medium of claim 23, further comprising ~~wherein the link transmitter has a plurality of logical channels, and wherein the link transmitter selects to which of~~ selecting from the plurality of logical channels to allocate the additional data credits at the link transmitter.

26. (cancelled)

27. (currently amended) A computer-readable medium ~~containing~~ encoded with computer executable instructions for instructing a processor to perform a method of early buffer return, the instructions comprising:

allocating at the link transmitter the plurality of data credits to a plurality of logical channels;

~~a link transmitter~~ transmitting a packet from the link transmitter to a link receiver on an ingress link;

diminishing ~~a~~ the plurality of data credits at the link transmitter as the packet is transmitted;

~~the link receiver~~ storing the packet in a plurality of receiver buffers at the link receiver;

~~the link receiver~~ transmitting the packet out of the plurality of receiver buffers at the link receiver on an egress link; and

placing the plurality of receiver buffers in a free buffer pool after a portion of the packet has been transmitted out of the plurality of receiver buffers, wherein the portion of the packet is proportional to a ratio of an egress link speed to an ingress link speed, and wherein the free buffer pool corresponds to additional data credits.

28. (currently amended) The computer-readable medium of claim 27, wherein the portion of the packet is ~~substantially~~ equal to one minus the ratio of the egress link speed to the ingress link speed.

29. (currently amended) The computer-readable medium of claim 27, further comprising ~~wherein the link transmitter has a plurality of logical channels, and wherein the link transmitter selects to which of~~ selecting from the plurality of logical channels to allocate the additional data credits at the link transmitter.

30. (cancelled)